Table of miscellaneous meteorological data for October, 1884—Signal Service observations—Continued.

Stations.	Elevation above sea-level.	Atmospheric pressure.								Temperature of the air (in degrees Fahrenheit).														Winds.						
		Mean actual barometer.	Departure from normal.	Mean reduced barometer.	Extremes.				Monthly range of barometer.	Monthly mean.	Departure from normal.	Extremes.				Monthly range.	Daily ranges.			Mean rel. humidity.	Mean dew-point.	Precipitation.	Departure from normal	Total movement.	Prevailing direction.	Max. velocity.		Date.	No. of rainy days.	No. of cloudy days.	No. of fair days.	No. of clear days.
					Highest barometer	Date.	Lowest barometer	Date.				Max.	Date.	Mean max	Min.	Date.	Mean min	Greatest.	Date.	Least.	Date.						Miles p.hr	Direction.					
Extreme northwest.																															
Moorhead	923	28.98	—.01	30.00	30.43	23	29.31	5	1.12	44.3	+1.8	77.7	2	56.0	14.9	23	35.0	62.8	36.0	9	8.5	29	65.8	32.4	3.70	+1.61	9,843	s.	45	s.	25	9	8	15	8
Bismarck	1,694	28.16	.00	30.04	30.50	20	29.61	10	0.84	46.5	+4.1	80.8	18	58.9	10.5	27	35.7	70.1	42.3	23	11.5	31	67.1	34.9	0.92	—0.41	7,037	nw.	35	nw.	21	5	4	13	14
Fort Buford	1,930	27.92	—.03	30.02	30.42	22	29.62	18	0.79	44.5	+2.9	85.9	18	32.6	14.3	27	22.8	71.6	43.8	9	8.3	2	62.7	30.5	0.44	—0.61	7,320	w.	48	nw.	25	6	10	16	5
Saint Vincent	804	29.07	—.02	29.97	30.43	20	29.36	5	1.06	42.0	+2.1	75.4	15	52.8	10.2	31	31.7	65.2	35.3	13	6.0	29	75.2	34.0	1.15	—0.43	8,467	nw.	38	s.	8	10	9	13	9
Fort Totten	.....	28.34	.....	.....	.....	...	.....	...	.....	42.6	.....	85.8	18	55.9	12.0	31	32.2	73.8	43.3	18	6.0	29	71.9	32.9	0.92	.....	11,696	nw.	44	nw.	6	9	6	14	11
Pacific coast region.																															
Cape Mendocino	637	29.35	+.04	30.04	30.23	31	29.62	12	0.62	54.2	.....	75.8	23	60.9	42.2	1	49.1	33.6	25.4	22	6.1	18	80.8	47.9	0.52	.....	12,964	n.	68	s.	12	4	2	12	17
Fort Canby	179	29.82	+.01	30.02	30.42	25	29.42	12	1.00	52.2	.....	67.0	10	57.1	42.0	14	46.8	25.0	16.4	12	4.2	19	88.4	48.8	6.24	.....	8,868	s.	56	s.	8	9	9	7	15
Los Angeles	371	29.60	—.01	30.00	30.19	27	29.71	1	0.48	62.3	0	89.1	22	74.3	42.9	7	51.2	46.2	36.6	7	3.0	12	71.8	51.1	0.39	—0.28	3,707	w.	24	nw.	2	2	2	4	25
Olympia	36	30.01	+.02	30.05	30.45	26	29.47	2	0.98	50.1	+1.7	66.5	17	58.8	34.5	3	43.7	32.0	27.5	17	5.0	18	83.3	45.0	4.30	—1.30	1,723	s.	19	s.	8	15	12	12	7
Portland	67	29.98	.00	30.05	30.42	26	29.45	12	0.97	51.2	—1.6	72.0	16	61.9	36.0	20	44.9	36.0	25.0	16	9.0	11	82.5	45.6	4.01	—0.94	3,211	s.	22	s.	11	17	12	11	8
Red Bluff	332	29.65	.00	30.01	30.24	21	29.72	9	0.53	02.1	+0.6	87.0	22	75.3	41.5	28	49.8	45.5	34.5	22	12.0	31	52.8	42.3	0.90	—0.61	3,920	n.	28	n.	13	3	0	5	22
Roseburg	.....	29.61	.....	.....	.....	...	.....	...	.....	51.0	+1.2	75.7	8	64.5	33.9	3	43.6	44.8	32.9	3	11.7	18	82.6	45.8	1.15	—2.07	1,302	nw.	...	.....	...	9	5	17	9
Sacramento	64	29.92	—.02	29.99	30.19	27	29.74	9	0.45	59.9	—0.4	80.5	8	72.1	42.0	3	49.6	38.5	31.0	11	3.5	13	71.2	49.8	2.01	+1.11	3,495	n.	20	sw.	12	4	1	4	26
San Diego	67	29.89	—.01	29.96	30.13	17	29.70	1	0.43	01.3	—1.3	87.0	22	68.8	47.0	6	54.3	40.0	35.0	22	4.2	12	77.3	53.5	0.35	—0.14	4,034	w.	22	e.	22	3	4	9	18
San Francisco	60	29.94	—.03	30.01	30.21	21	29.80	1	0.41	56.9	—2.2	75.5	8	64.0	50.0	...	52.5	25.5	21.0	8	5.0	19	84.5	52.6	2.55	—1.42	4,922	w.	26	w.	9	4	4	14	13
Northern slope.																															
Fort Assinaboine	2,720	27.11	.00	30.04	30.54	21	29.69	1	0.85	46.4	+7.4	83.0	13	59.3	13.8	27	33.7	69.2	41.2	27	8.7	1	48.6	25.2	0.41	—0.29	9,647	w.	60	sw.	13	6	7	12	12
Cheyenne	6,105	24.07	+.07	30.11	30.48	16	29.69	1	0.79	47.0	+3.3	79.8	2	63.2	9.4	27	33.8	67.4	40.7	8	12.9	20	50.9	27.3	0.50	—0.30	7,473	nw.	42	w.	5	4	5	11	15
Deadwood	4,600	25.40	+.06	30.08	30.44	16	29.64	1	0.80	49.5	+7.8	76.0	14	60.1	20.0	27	39.5	50.0	32.5	8	8.0	7	54.0	31.8	1.48	—0.68	3,024	se.	23	ne.	6	7	2	12	16
Fort Benton	2,681	27.19	.....	30.09	30.49	16	29.70	1	0.80	46.4	+2.5	81.4	17	60.9	19.5	7	33.0	01.9	49.9	17	11.8	1	53.1	28.2	0.36	—0.89	0,894	sw.	40	sw.	31	4	9	11	8
Fort Custer	3,040	26.83	+.01	30.07	30.40	16	29.47	1	0.99	48.4	+3.2	84.1	18	64.6	20.3	27	34.7	63.8	40.1	9	9.4	20	64.8	35.2	0.66	—4.00	4,697	se.	36	nw.	31	6	6	14	11
Fort Maginnis	4,340	25.54	.....	30.08	30.48	16	29.74	1	0.74	43.0	.....	70.2	13	55.9	20.3	27	32.2	55.9	42.0	13	10.8	26	53.1	20.4	0.33	.....	9,229	ne.	46	nw.	28	6	6	13	12
Fort Shaw	3,550	26.33	.....	30.03	30.41	16	29.67	1	0.74	46.3	+7.1	78.0	17	59.1	21.5	20	34.9	56.5	45.5	17	6.5	2	51.3	27.0	0.39	—0.81	8,759	w.	46	w.	25	3	2	16	13
Helena	4,044	25.84	.00	30.08	30.50	16	29.53	1	0.97	47.0	+5.9	74.0	9	57.6	28.0	7	38.6	46.0	29.0	9	4.0	2	51.3	28.9	0.49	—0.97	4,631	w.	29	w.	25	4	3	15	13
Poplar River	2,030	27.81	.....	30.03	30.44	22	29.65	18	0.79	42.7	.....	83.0	18	59.2	11.1	23	28.9	71.9	50.1	23	4.7	1	77.4	35.2	0.46	.....	6,071	w.	35	w.	25	6	8	10	13
Spokane Falls	1,906	27.99	+.05	30.07	30.52	16	29.67	12	0.84	46.9	+3.0	70.5	8	57.2	26.0	7	37.9	44.5	33.8	8	9.0	11	72.6	37.7	1.82	—1.19	2,675	sw.	17	sw.	8	13	12	9	10
Middle slope																															
Denver	5,294	24 79	+.06	30.05	30.43	16	29.60	1	0.83	55.5	+5.9	80.3	6	68.7	26.0	27	41.9	54.3	38.2	9	16.5	20	48.9	34.1	0.21	—0.58	4,140	s.	32	sw.	....	4	4	15	12
Dodge City	2,517	27.49	+.09	30.12	30.41	23	29.85	1	0.56	57.6	+2.6	83.2	17	69.9	29.5	30	47.7	53.7	33.1	30	9.9	3	71.2	46.8	1.50	+0.17	10,248	se.	48	se.	1	8	6	7	18
Fort Elliott	2,650	27.34	+.08	30.13	30.38	23	29.87	26	0.51	59.4	+2.5	87.0	5	71.2	33.5	30	49.9	53.5	38.0	9	8.0	25	74.1	49.9	5.45	+2.77	7,238	s.	31	s.	19	10	6	9	16
North Platte	2,841	27.12	+.01	30.08	30.40	23	29.68	2	0.72	54.6	+5.2	83.0	...	67.9	20.0	23	42.8	57.0	38.6	31	12.9	29	64.3	41.3	0.74	—0.65	7,307	s.	45	sw.	5	7	5	12	14
Pike's Peak	14,134	17.92	.....	30.20	30.56	16	29.90	26	0.66	24.4	+3.4	39.5	9	30.3	— 5.0	27	18.8	44.5	21.3	8	6.3	29	79.7	18.8	0.99	—0.54	10,614	sw.	68	w.	5	9	1	13	17
West Las Animas	3,899	26.07	+.09	30.00	30.32	16	29.61	1	0.71	56.0	+3.7	90.5	6	74.4	23.3	31	41.2	67.3	53.5	31	15.7	25	65.0	42.3	0.43	+0.05	5,256	s.	32	s.	2	6	6	12	13
Southern slope.																															
Fort Concho	1,900	28.17	+.07	30.12	30.37	23	29.88	26	0.49	65.1	0	91.8	5	78.0	40.8	25	55.5	51.0	35.2	18	6.5	24	73.0	55.0	5.49	+2.85	5,679	s.	28	s.	1	6	7	12	12
Fort Davis	4,928	25.26	.....	30.10	30.29	16	29.91	1	0.38	59.6	—2.0	82.0	7	71.8	36.0	30	49.5	46.0	37.9	31	5.0	23	74.8	50.1	4.35	—2.34	4,512	ne.	20	ne.	8	6	10	13	8
Fort Sill	1,200	.....	.....	.....	.....	...	.....	...	.....	.....	.....	.....	...	.....	.....	...	.....	.....	.....	...	.....	...	.....	.....	.....	.....	.....	...	.....	...	...	...	...	...	...
Fort Stockton	3,010	27.06	+.07	30.10	30.32	16	29.85	1	0.47	63.9	+0.4	87.8	5	75.7	40.3	28	54.7	47.5	28.8	18	3.9	24	74.8	54.3	6.25	+5.29	6,859	se.	36	se.	1	12	5	13	13
Northern plateau.																															
Boisé City	2,750	27.23	.....	30.09	30.41	16	29.42	1	0.99	51.3	+3.7	77.4	12	62.2	29.8	7	41.5	47.6	34.4	12	11.8	1	60.2	36.4	1.52	+0.27	3,556	nw.	25	nw.	1	6	4	14	13
Dayton	1,667	28.31	.....	30.10	30.44	16	29.62	12	0.82	50.8	+3.4	73.7	12	62.3	28.8	7	40.4	44.9	32.8	23	11.7	1	68.2	39.7	3.45	+0.81	4,244	sw.	22	sw.	13	12	8	11	12
Lewiston	780	29.24	.....	30.09	30.58	15	29.57	12	1.01	50.4	+1.8	73.6	13	61.1	31.0	7	41.7	42.6	29.0	24	6.5	1	73.7	41.5	2.08	+0.15	1,149	ne.	25	nw.	9	16	6	12	13
Middle plateau																															
Salt Lake City	4,348	25.68	+.04	30.08	30.37	16	29.33	1	1.04	52.6	+2.0	79.5	17	62.6	31.7	27	43.4	47.8	31.5	5	7.7	7	52.4	34.4	0.36	—1.59	3,947	nw.	32	sw.	1	5	4	11	16
Carson City‡	4,630	25.38	.....	.....	.....	...	.....	...	0.69	48.6	.....	77.0	16	.....	22.5	27	.....	54.5	.....	...	.....	...	62.0	.....	0.22	.....	1,722	sw.	12	.....	...	4	9	...	...
Southern plateau.																															
Camp Thomas	2,710	27.24	.....	29.94	30.22	16	29.59	1	0.63	65.2	+7.1	89.5	5	78.1	33.1	28	52.4	56.4	41.7	5	9.2	22	59.7	49.0	0.69	+0.44	.....	s.	...	.....	...	4	2	15	14
El Paso	3,764	26.31	+.06	30.05	30.33	16	29.77	1	0.56	62.6	—1.2	84.6	5	76.2	37.1	29	54.3	47.5	33.9	29	7.0	24	71.1	51.9	5.15	+4.16	1,539	e.	19	w.	10	12	8	12	11
Fort Apache	5,050	25.04	+.02	29.94	30.16	16	29.60	1	0.57	56.9	+4.8	85.3	5	44.4	27.0	28	42.2	53.8	48.2	5	8.9	24	64.7	43.0	2.02	+0.17	4,813	ne.	26	s.	18	8	5	9	17
Fort Grant	4,856	25.24	.....	29.94	30.16	16	29.66	1	0.50	63.3	+1.9	85.5	5	73.4	43.0	28	55.1	42.5	26.9	30	8.2	10	54.4	44.8	3.06	+2.30	6,840	se.	36	se.	15	8	3	15	13
Prescott	5,389	24.75	+.03	29.95	30.21	16	29.52	1	0.09	53.5	+0.8	79.0	8	68.7	29.6	28	41.5	49.4	42.6	8	13.9	23	57.0	35.9	1.42	.....	4,174	s.	37	s.	1	4	1	11	19
Yuma	.....	.....	.....	.....	.....	...	.....	...	.....	68.0	—3.6	.....	...	.....	.....	...	.....	.....	.....	...	.....	...	.....	.....	.....	.....	.....	...	.....	...	...	...	...	...	...
Rio Grande valley.																															
Brownsville	59	29.97	+.03	30.03	30.21	16	29.89	2	0.32	73.5	—2.0	88.0	8	82.8	57.0	28	68.3	31.0	20.4	10	7.0	24	87.8	69.3	15.71	+12.4	3,934	n.	25	ne.	24	17	10	14	7
Rio Grande City	230	29.86	+.04	30.10	30.30	16	29.88	2	0.42	74.2	—0.1	93.7	7	84.1	57.0	28	67.0	36.0	26.5	10	6.0	25	78.0	65.9	4.45	+2.34	3,692	e.	28	e.;n.	28	12	7	11	13
Florida peninsula.																															
Cedar Keys	22	30.05	+.02	30.07	30.32	24	29.87	9	0.44	74.3	+0.2	89.1	8	82.1	52.7	24	67.2	36.3	22.3	16	8.1	15	73.7	64.8	0.13	—4.00	7,285	ne.	26	ne.	15	2	0	7	24
Key West	20	29.96	—.01	29.98	30.16	25	29.78	14	0.38	78.3	—0.8	86.6	1	81.9	70.3	19	74.7	16.3	11.8	5	3.5	13	77.3	70.3	3.17	—1.93	10,614	ne.	28	ne:n.	15	15	3	19	9
Sanford	36	29.98	.....	30.02	30.26	20	29.84	9	0.42	74.4	.....	94.0	9	84.5	55.5	18	66.1	38.5	28.8	18	4.6	16	78.0	66.6	2.19	.....	6,198	ne.	64	n.	15	11	1	16	14

* Total movement of wind insufficient on account of frost-work.
† Observations taken at the Washburne Observatory, University of Wisconsin, made by voluntary observer.
‡ Observations taken at the Boswell Observatory by Professor G. D. Swezey, voluntary observer.
§ Observations taken by Chas. W. Friend, voluntary observer.

ATMOSPHERIC ELECTRICITY.

AURORAS.

No extensive auroral display was observed during the month. The display observed by the largest number of stations, occurred on the evening of the 1st; it was seen at scattering stations in New England; at Cape Henry, Virginia; Portsmouth, Ohio; Richmond, Kentucky; Vevay, Indiana, and Port Angeles, Washington Territory. The following descriptions relate to this display:

Bangor, Maine, 1st: at 8 p. m., an aurora was observed extending but a short distance above the northern horizon; at 11 p. m., the light had extended to the zenith; the display continued until daylight on the 2d, being very bright at 4 a. m.

Mount Washington, New Hampshire, 1st: an auroral light was visible from 9.30 p. m. until after midnight; the display consisted of pale streamers, without apparent motion, reaching nearly to the zenith, and covering 70° of the northern horizon.

Bethel, Connecticut, 1st: a faint auroral light was observed in the north during the evening.

Eastport, Maine, 1st: an aurora was visible from 10.40 p. m. until 4 a. m. of the 2d; waves of rose-tinted light shot upward nearly to the zenith.

Albany, New York, 1st: at 11.30 p. m., an aurora consisting of waves and flashes of hazy light, extended from azimuth 135° to 270°, and upward to the zenith. At 1 a. m. of the 2d, the display was obscured by clouds.

Cape Henry, Virginia, 1st: a very faint aurora was observed between 10 and 11 p. m.; it consisted of a whitish light 3° in width, and about 10° above the northern horizon. No beams or "merry dancers" were observed; the display disappeared about 11 p. m.

Syracuse, New York, 1st: bright auroral streamers were visible at 10 p. m.

Portsmouth, Ohio, 1st: an auroral light was observed in the northwestern sky at 11 p. m.

Richmond, Kentucky, 1st: from 9 to 11 p. m., an auroral arch was visible extending from northeast to northwest and to an altitude of 10°; occasional faint streamers were also observed.

Vevay, Indiana, 1st: at 11 p. m., an auroral light extended from north-northwest to northeast; beams of hazy light reached the zenith; the display continued until after midnight.

Burlington, Iowa, 1st: an aurora was observed at 10.45 p. m.; it appeared in the northwestern sky and extended from the horizon to an altitude of 50°. The rays of white light blended into purple, presenting a beautiful appearance for about five minutes.

Port Angeles, Washington Territory, 1st: a faint aurora was observed in the north at 7 p. m.; it remained visible for about one and one-half hours, resembling in appearance the morning dawn.

At Pysht, Washington Territory, an auroral light was visible at 4 a. m. on the 1st.

Displays observed on other dates during the month are as follows:

2d.—Sidney, Nova Scotia; Eastport and Orono, Maine; Oswego, New York; Moorhead, Minnesota.

4th.—Allison, Kansas.

6th.—Eastport, Maine; Alpena and Ionia, Michigan; Winnipeg, Manitoba.

7th.—Hartford, Connecticut.

9th.—Alpena and Escanaba, Michigan; Webster, Dakota, Winnipeg, Manitoba.

12th.—Winnipeg, Manitoba.

13th.—Escanaba, Michigan.

14th.—Eastport, Maine.

15th.—Charlottetown, Prince Edward Island; Gardiner, Maine; Winnipeg, Manitoba.

18th.—Eastport, Maine.

19th and 20th.—Winnipeg, Manitoba.

24th.—Eastport, Maine; Huron, Dakota.

26th.—Eastport, Maine; Clay Centre, Kansas.

27th.—Clay Centre, Kansas.

28th.—Gardiner, Maine.

THUNDER-STORMS.

Thunder-storms were reported in the various states and territories as follows:

Alabama.—9th, 10th, 19th, 20th.

Arizona.—5th, 6th, 10th, 13th, 14th, 18th, 22d, 23d, 24th, 26th.

California.—1st, 9th, 12th, 16th, 18th, 19th.

Colorado.—West Las Animas, 19th.

Connecticut.—Bethel, 14th; Colebrook and New Haven, 12th.

Dakota.—1st, 2d, 4th, 6th.

Delaware.—Delaware Breakwater, 12th.

Florida.—2d, 4th, 6th, 9th to 14th, 19th to 23d.

Georgia.—9th, 10th, 22d, 30th.

Idaho.—13th, 14th, 17th, 18th.

Illinois.—1st, 3d, 4th, 5th, 7th, 8th, 16th.

Indiana.—1st, 2d, 4th, 5th, 7th, 16th, 21st.

Iowa.—1st, 3d, 4th, 6th, 7th, 11th, 16th, 20th.

Kansas.—1st, 3d, 5th, 6th, 7th, 20th.

Kentucky.—1st, 2d, 4th, 7th to 12th, 15th.

Louisiana.—2d, 3d, 4th, 19th to 22d, 26th.

Maine.—12th, 13th.

Massachusetts.—3d, 4th, 6th, 12th, 13th, 18th.

Michigan.—1st to 5th, 8th, 12th, 15th, 16th, 19th, 21st.

Minnesota.—2d, 6th, 20th.

Nebraska.—1st, 3d, 4th, 6th.

Nevada.—Carson City, 12th, 16th.

New Jersey.—6th, 12th, 28th.

New York.—1st, 4th, 6th, 12th, 13th, 16th to 19th, 22d.

North Carolina.—1st, 9th, 10th, 12th, 30th.

Ohio.—1st, 4th, 5th, 7th, 8th, 16th, 21st, 31st.

Oregon.—12th, 16th, 17th.

Pennsylvania.—1st, 4th, 7th, 8th, 11th, 12th, 17th, 18th.

Rhode Island.—Providence, 12th; Point Judith, 12th, 18th.

South Carolina.—Stateburg, 8th, 9th.

Tennessee.—1st, 7th, 8th, 10th, 21st.

Texas.—2d, 3d, 4th, 6th, 7th, 9th, 10th, 12th, 14th, 15th, 18th to 23d, 25th.

Utah.—Salt Lake City, 14th.

Vermont.—4th, 6th, 12th, 13th, 19th.

Virginia.—2d, 8th, 9th, 12th, 22d.

Washington Territory.—11th, 12th, 13th, 17th, 18th, 24th.

Wisconsin.—3d to 6th, 16th, 18th, 31st.

REPORT OF THUNDER STORMS OBSERVED BY SPECIAL VOLUNTARY OBSERVERS, PREPARED BY PROF. H. A. HAZEN.

The total number reported was 461. Twenty or more occurred on the following days: 1st, 21; 4th, 60; 5th, 33; 6th, 24; 7th, 22; 8th, 35; 12th, 40; 16th, 24, and 22d, 24. On the 4th a trough-like depression of no great depth extended from southwest to northeast, central in Illinois. The storms were mostly grouped along the southeast border of the depression. On the 5th the storms were central in Illinois and Indiana in a south-southeast direction from the "low" and at an average distance of 600 miles. On the 8th storms were most frequent in Pennsylvania and Maryland, at a distance of 330 miles from "low," and toward the south-southwest. Comparing the number of storms by districts with the records of voluntary observers from 1851 to 1873 we have Table i. The districts are: i., New England and New York; ii., Delaware, Maryland, New Jersey, North Carolina, Pennsylvania, Virginia, and West Virginia; iii., Illinois, Indiana, Kentucky, Ohio, and Tennessee; iv., Michigan, Minnesota, and Wisconsin; v., Dakota, Iowa, Kansas, Missouri, Montana, and Nebraska. We see from this table a marked excess in the number of storms in all the districts, amounting over the whole country to nearly .5 storm per station.

TABLE I.—*Mean number of thunder-storms in October at each station, by districts.*

District.	1851–1873.		1884.		Difference.	
	Stations.	No.	Stations.	No.	Stations.	No.
I	12	1.41	33	1.85	+ 21	+ .44
II	10	1.38	50	1.72	+ 40	+ .34
III	14	1.58	36	2.56	+ 22	+ .98
IV	6	1.64	14	1.79	+ 8	+ .15
V	9	1.54	33	1.85	+ 24	+ .31
Total	51	1.49	166	1.95	+115	+ .46

TABLE II.—*Mean number of thunder-storms per station in all districts for October; also mean declination range.*

Year.	Stations.	No.	Departure.	Magnetic Declination.	Departure.	Year.	Stations.	No.	Departure.	Magnetic Declination.	Departure.
1851	33	1.21	+.27	.....	.....	1864	33	1.21	+.27	1.44	— .12
1852	48	1.54	—.06	.....	.....	1865	60	1.73	—.25	1.45	— .13
1853	32	1.12	+.36	1.07	+.25	1866	65	1.21	+.27	1.36	— .04
1854	48	1.71	—.23	1.29	+.03	1867	83	1.37	+.11	1.51	— .19
1855	47	1.64	—.16	1.14	+.18	1868	49	1.65	—.17	1.13	+ .19
1856	47	2.09	—.61	1.07	+.25	1869	49	1.08	+.40	1.58	— .26
1857	18	1.28	+.20	0.99	+.33	1870	63	1.44	+.04	1.14	+ .18
1858	62	1.92	—.44	1.09	+.23	1871	60	1.30	+.18	1.59	— .27
1859	65	1.52	—.04	1.62	—.30	1872	77	1.44	+.04	1.19	+ .13
1860	60	1.53	—.05	1.73	—.41	1873	61	1.34	+.14	1.16	+ .16
1861	77	1.58	—.10	1.48	—.16						
1862	28	1.93	—.45	1.25	+.07	Mean	.....	1.48	.....	1.32	.....
1863	34	1.20	+.28	1.30	—.04						

Table ii. gives values of mean number of storms for each October from 1851 to 1873, and also the mean diurnal range of magnetic declination at Trevandrum. If these figures be projected graphically there will be found a partial coincidence between the maximum and minimum points in each curve. The fluctuations however are small.

OPTICAL PHENOMENA.

SOLAR HALOS.

Solar halos were observed during October, in the several districts as follows:

New England.—Hartford, Connecticut, 29th; Cornish, Maine, 8th, 29th; Orono, Maine, 29th; Somerset, Massachusetts, 2d.

Middle Atlantic states.—Baltimore, Maryland, 26th; Cape